

April 27, 1937.

H. F. COURTRIGHT ET AL

2,078,530

CONTAINER

Filed July 28, 1932

3 Sheets-Sheet 1

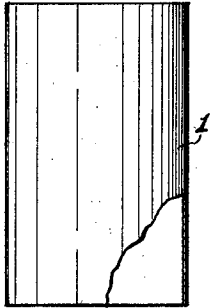


FIG. 1

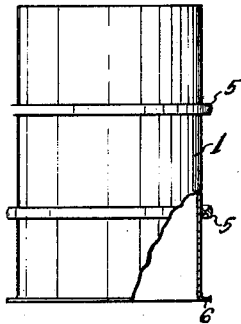


FIG. 2

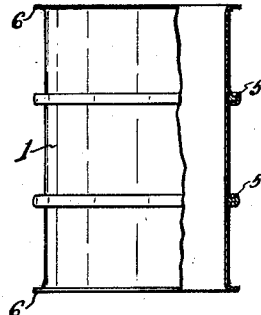


FIG. 3



FIG. 4

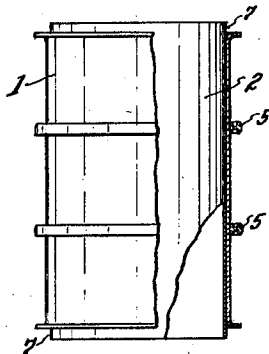


FIG. 5

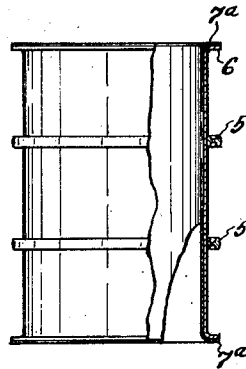


FIG. 6



FIG. 7

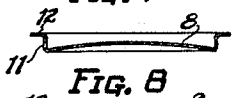


FIG. 8



FIG. 9

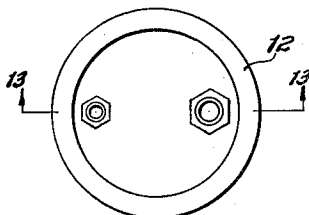


FIG. 11

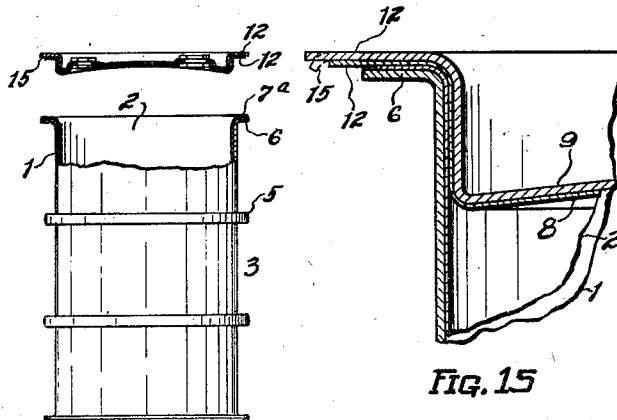


FIG. 10

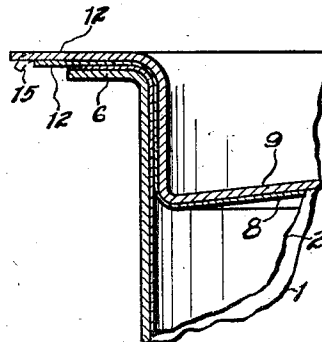


FIG. 15

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3 Sheets-Sheet 2

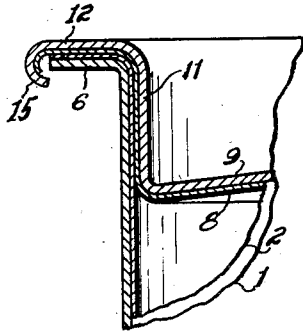


FIG. 16

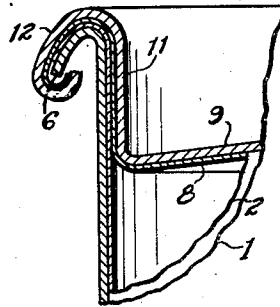


FIG. 17

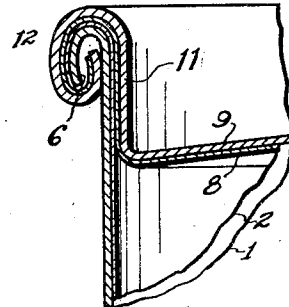


FIG. 18

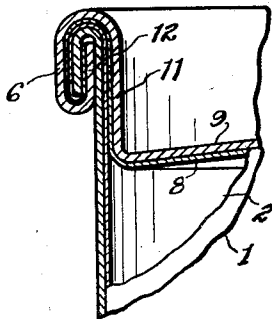


FIG. 19

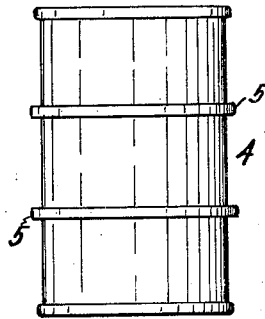


FIG. 12

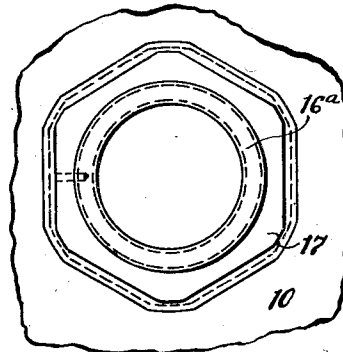


FIG. 14

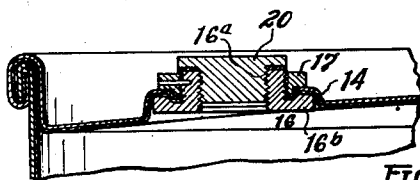


FIG. 13

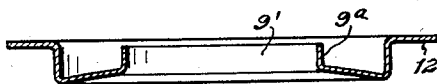
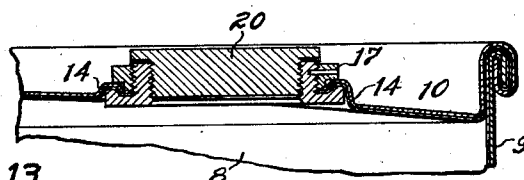


FIG. 9a

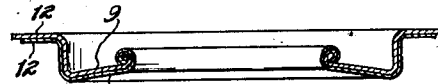


FIG. 9c

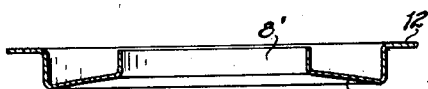


FIG. 9b

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3 Sheets-Sheet 3

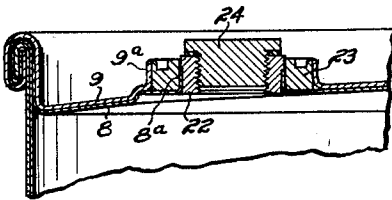


FIG. 20

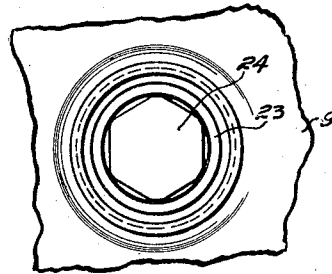


FIG. 21

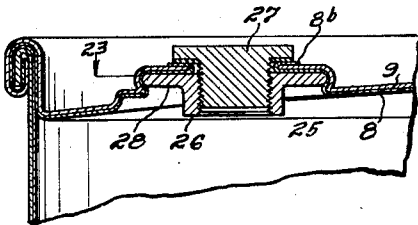


FIG. 22

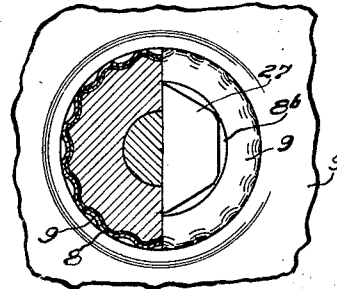


FIG. 23

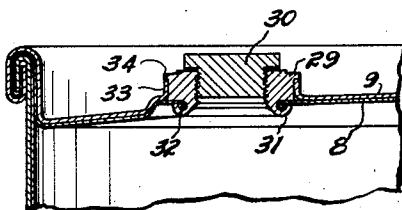


FIG. 24

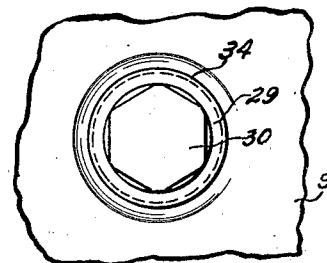


FIG. 25

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CONTAINER

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pany, Cleveland, Ohio, a corporation of Ohio

Application July 28, 1932, Serial No. 625,360

4 Claims. (Cl. 220—39)

This invention relates to a container construc-
tion and process of making same, more partic-
ularly a double metallic walled container in
which the inner and outer walls are inter-related
to provide a substantially unitary construction
and liquid tightness, while permitting expansion
and contraction of the walls independently of
each other, and in which the outer wall is pro-
tected against contact with the contents of the
container. The invention also relates to the
mounting of one or more bung rings in one or
more portions of the container in such manner
that the contents of the container cannot con-
tact with its outer wall. By reason of the fact
that the walls may be made of different thick-
nesses of sheet stock and also formed of differ-
ent materials, the outer wall may be made of
relatively thick or heavy sheet metal (such as
sheet steel) and capable of withstanding strains
due to dropping of the container when filled and
internal and external pressures, and the inner
wall may be made of a different material that is
relatively thin and/or soft, depending on the
contents to be shipped or stored in the contain-
er. For these reasons the container may be con-
structed with an inner wall which will not be
affected by or affect the contents of the con-
tainer. The container may therefore be used
for storing and shipping various kinds of liquids,
including food products, essential oils, acids,
beverages and milk.

One object of the invention is to provide an
improved process of making a double walled con-
tainer in which the inner and outer walls form-
ing the sides of the container and inner and
outer walls forming either or both ends thereof
are respectively arranged in substantially face to
face relation and united by a single operation.

Another object of the invention is to provide
an improved process of making a double walled
container of cylindrical shape in which the in-
ner and outer side walls and the inner and outer
walls forming each head thereof are respective-
ly arranged in face to face relation and double
seamed by a single operation.

Another object of the invention is to provide
an improved container that is lined with a suit-
able material to permit shipment and storing of
various kinds of liquids and semi-liquids without
danger of such liquids or semi-liquids being con-
taminated or the liner being affected thereby.

Another object of the invention is to provide
a double walled container in which the inner
walls are so connected to each other and the

outer walls that danger of leakage is entirely
eliminated.

Another object of the invention is to provide
an improved container having inner and outer
walls which are related and connected to form
a unitary structure, thereby permitting the inner
wall to be formed from relatively thin stock.

Another object of the invention is to provide
an improved bung ring and mounting therefor
for a double walled container so arranged that
danger of the contents of the container contact-
ing with the outer wall and/or escaping is
avoided.

Other objects of the invention will be appar-
ent to those skilled in the art to which our in-
vention relates from the following description
taken in connection with the accompanying
drawings, wherein

Fig. 1 is a side elevation, parts being broken
away, showing a section of sheet stock rolled or
bent into cylindrical shape and constituting the
first step in fabricating the outer side wall of the
container.

Figs. 2 and 3 illustrate certain additional steps
applied to the outer or exterior wall.

Fig. 4 is a side elevation, parts being broken
away, showing a section of sheet stock rolled or
bent into cylindrical shape and constituting the
first step in fabricating the inner side wall of
the container.

Fig. 5 is an elevation showing the inner side
wall positioned in the outer side wall, parts be-
ing broken away.

Fig. 6 is a view similar to Fig. 5, but showing
the ends of the inner wall bent radially outward-
ly to provide flanges in engagement with the
flanges of the outer wall.

Figs. 7 and 8 are transverse sections of the
outer and inner walls, respectively, of each head
for the container.

Fig. 9 is a transverse section showing the two
walls for each head positioned face to face.

Figs. 9a and 9b are sectional views of the inner
and outer walls, respectively, for a head of modi-
fied form.

Fig. 9c is a sectional view of the walls shown
in Figs. 9a and 9b, but in assembled relation.

Fig. 10 is a view showing the body of the con-
tainer and the heads therefor separated, parts
being broken away; the upper head showing the
mounting of the bung rings therein.

Fig. 11 is a plan view of the upper head shown
in Fig. 10.

Fig. 12 is a side elevation of the completed
container.

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Fig. 13 is a section on the line 13—13 of Fig. 11, enlarged.

Fig. 14 is a fragmentary plan view of parts shown in Fig. 13.

5 Figs. 15, 16, 17, 18 and 19 are fragmentary sections, enlarged, showing the steps of double seaming the body to one of the heads.

Fig. 20 is a fragmentary section showing a different form of bung ring and mounting therefor.

10 Fig. 21 is a plan view of the parts shown in Fig. 20.

Fig. 22 is a fragmentary section showing another form of bung ring and mounting therefor.

15 Fig. 23 is a plan view of the parts shown in Fig. 22.

Fig. 24 is a fragmentary section showing another form of bung ring and mounting therefor.

Fig. 25 is a plan view of the parts shown in Fig. 24.

20 In carrying out our process, we first form or shape sections of sheet metal of the desired width and length into bodies 1, 2, preferably of cylindrical shape, the former body being shown in Fig. 1 and serving as the outer wall or member of the body portion 3 for the container, indicated as an entirety at 4 (see Fig. 12), and the latter body being shown in Fig. 4 and serving as the inner wall or member of the body portion 3. The walls 1, 2, are rolled or bent into shape in any desired manner and their longitudinal side edges may be welded or seamed. The body 2 is somewhat longer than the body 1 for a purpose which will later appear; also, the interior diameter of the body 1 and exterior diameter of the body 2 are preferably such that the latter, when assembled within the former, will be substantially in face to face or surface to surface relation with the body 1, and thus serve as a liner. The body 1 is formed from sheet steel of any desired gage. 35 The body 2 may be formed of any desired sheet material and of any desired gage, but due to the fact that the outer wall is relatively heavy, the inner wall may be made of thinner sheet stock material, and as the purpose of the lining for the container is to provide for the shipment and storing of liquids and semi-liquids which would cause corrosion of sheet steel and/or be contaminated thereby, such inner wall is preferably formed of a material (for example, copper, chromium nickel, aluminum, or other alloys) that will not corrode or in any way affect the liquids or semi-liquids, chemically or otherwise, to be shipped or stored.

We next provide hoops 5 for the body portion 3. 55 These hoops may be rolled into the wall 1 while it is being shaped, or thereafter, but in the illustrated form of construction the hoops 5 consist of steel rings secured to the wall 1, as shown in Fig. 2.

60 We next provide the opposite ends of the body 1 with outwardly extending flanges 6, as shown in Fig. 3. It will be obvious that the flange 6 at one end of the body 1 may be provided prior to the application of the rings (see Fig. 2). We next assemble the bodies 1 and 2, the latter being inserted in or telescoped relative to the body 1, with its ends projecting substantially equal distances from the ends of the body 1, as shown at 7, and then the ends 7 are bent or rolled outwardly to form flanges 7a engaging the flanges 6, as shown in Fig. 6.

Next, we stamp out and shape the inner and outer walls or members 8, 9, respectively (see Figs. 7 and 8) which, when assembled and connected to the body portion 3, constitute the heads

10 of the container 4. The walls 8, 9, are formed from sheet material similar to the bodies 2, 1, respectively. Each wall 8, 9, has a contour similar to the cross-sectional shape of the walls 1, 2, and is shaped to provide an upstanding rim 11 having an outwardly extending flange 12, the flange 12 on the wall or member 9 being somewhat wider than the flange 12 on the wall or member 8, (see Figs. 9 and 15), for a purpose later to be set forth. The stamping and shaping of the walls 8 and 9 are effected in any well known manner.

We next assemble one wall 8 and one wall 9 to form one head (see Fig. 9) and (when the container is to be provided with two heads) one wall 8 and one wall 9 to form the other head, and we then form in one pair of the head members 8, 9, aligned openings 8', 9'. In one form of construction (see Fig. 9a), the marginal walls of the openings 8', 9', are distended to reinforce such walls, as shown at 9a in Figs. 9a and 9b, the distended portion of the inner wall enclosing the distended portion of the outer wall, as shown in Fig. 9c, to prevent contact of the container contents with the outer wall. The openings 8', 9', may be closed by a suitable cover (not shown) formed of a material similar to that of the walls 2 and 8. In another form of construction (see Figs. 10 and 11) we form in one pair of head members one or more openings (preferably two) and mount therein bung rings 13, as shown in Fig. 10.

The openings in those walls 8, 9, which will carry the bung rings and the distention of the metal around these openings, either or both, may, when desired, be provided for simultaneously with the stamping and shaping thereof or after the two walls have been assembled (Fig. 10). It will be understood that either or both of the openings for the container may be formed in the walls 1, 2, and suitable rings mounted in such openings.

We next connect heads 10 to the opposite ends of the body portion 3, each head being preferably applied or connected to one end of the body portion separately. This step of our process consists first in bending or curling inwardly the marginal portions of the flanges 12 upon themselves, while they are retained in face to face relation, as shown at 15 (Fig. 16), the purpose of this initial or preliminary curling step being to interlock the flanges 12, 12, of the walls 8, 9, together to prevent relative movement between them as the step of connecting each head 10 and body portion 3 is carried out and completed. To effect this curling operation and resulting interlock, the flange on the member 9 being longer than the adjacent flange 12 on the member 8, its edge portion is curled inwardly in advance of any curling of the adjacent flange (see dotted lines in Fig. 15) to prevent the latter from being pressed away from the flange of the outer member as the curling operation continues. The second operation of this step consists in double seaming the flanges 6—7 and flanges 12—12, this operation being shown in Figs. 15, 16, 17, 18 and 19. The double seaming is effected by positioning the body portion 3 on a rotatable base and turning it by suitable power driven means and then applying under pressure to the flanges one or more tools to curl the flanges initially as above set forth and to then progressively fold the pairs of flanges into the position shown in Fig. 19. The body portion 3 is then reversed on the base

and the other head double seamed thereto, in the same manner; or both heads may be double seamed to the body portion simultaneously. It will be noted that since the flanges 6, 7, at the opposite end of the body portion 3, co-operate to hold them in face to face engagement, and the flanges 12, 12, are interlocked in the same relation by the preliminary bend 15, the two pairs of related flanges may be folded, one pair relative to the other pair, into a double seam formation, the result being that all of the walls are interlocked into a single liquid tight joint, with the inner walls 2, 8, in contact at the joint, so that the contents cannot contact with the outer walls.

The step of mounting one or more bung rings in the walls 8, 9, of one head or the walls 1, 2, of the side portion 3 is carried out according to the type of ring employed. In Figs. 10 and 13 we show a head having two bung rings mounted therein of similar construction, each ring comprising a main member 16 and a secondary clamping member 17. The main member is formed of the same material as the walls 2 and 8 and consists of a collar 16a and a flange 16b, the collar being threaded externally to receive the secondary member 17 which is threaded internally. The flange 16b is provided with a polygonal periphery (see Fig. 14) which seats in the correspondingly shaped distended portions 14, 14, whereby the member 16 is held against turning. The walls 9, 8, are clamped between the flange 16b and member 17, when the latter is screwed into position and tightened (see Fig. 13) and also interlocked to each other and these members by forming in the flange 16b an annular recess 18, preferably adjacent the collar 16a and providing on the member 17 an annular rib 19 aligned with the recess 18 and adapted to crimp the marginal portions of the walls 9, 8, into the recess and thus interlock them between the outer wall of the recess and the rib 19. The clamping of the walls by the member 17 and interlocking thereof by the wall of the recess and rib serve to insure a liquid tight joint around the ring and to prevent contact of the contents of the container with the wall 9. But when desired, suitable gaskets may be used between these parts. The internal threaded wall of the collar 16a provides for a closing plug 20, the flange of which may engage a gasket 21. To lock the ring 17 to the collar 16a, we provide the ring with an opening 17a and when tightened in final position, an opening 17b is formed in the collar and thereafter a pin 17' is driven into the openings as shown in Fig. 13.

In Figs. 20 and 21 we illustrate a ring of a different construction consisting of inner and outer concentrically arranged annular members 22, 23, respectively, the inner member being internally threaded to receive a plug 24 and formed of material similar to that used for the walls 2 and 8. The external wall of the inner member 22 is recessed to receive the up-standing or distended portion 8a of the wall 8, the depth of the recess being slightly less than the thickness of the wall 8a, and the outer member 23 being shrunk on the member 22 to secure the wall 8a between them and the provision of a liquid tight connection for the wall. The distended portion 9a' of the wall 9 is then welded to the outer wall of the member 23. For this purpose, the upper face of the outer member 23 is recessed at 23a to provide a peripheral ring 23b which is welded to the dis-

tended wall 9a', the recess 23a forming an air gap so that the heat incident to the welding operation will not affect member 22.

In Figs. 22 and 23 we show a pressed in type of ring 25 formed of material similar to that used for the walls 2 and 8 and having an internally threaded neck 26 for a plug 27 and a flange 28 having its periphery interlocked to the walls 8, 9, against turning, and these walls being enveloped over or around such periphery into engagement with the upper and under surfaces of the flange 28. In this form of construction the wall 8 is extended and folded back on the wall 9, as shown at 8b, so that the contents of the container cannot contact with the outer wall.

In Figs. 24 and 25 we show a bung ring 29 threaded internally to receive a plug 30 and formed of material similar to that used for the walls 2 and 8. The lower face of the ring is provided with a bendable flange 31 which is bent and compressed over the marginal portion of the wall 8, such portion being folded on itself at 32 to form a wall which interlocks with the flange 31 when the latter is folded laterally and toward the ring 29. The marginal portion of the wall 9 is distended as shown at 33 and welded to the side wall of the ring. By preference, the side wall of the ring 29 is cut away to form a shoulder 34 which engages the end edge of the opening formed in the wall 9. When the ring 29 is formed with the shoulder 34, the weld is effected between it and the portion 33.

The plugs, as well as the rings or parts thereof which contact with the container contents, used for closing the bung rings are also formed of material similar to that used for the walls 2 and 8 to eliminate corrosion of these parts or contamination of the contents.

From the foregoing description it will be seen that we provide a double walled or lined container having the usual equipment, namely two bung openings; also that the inner walls 2 and 8 are co-extensive with the walls 1 and 9, respectively and that the walls 2 and 8 are so related and connected to the walls 1 and 9 that the contents placed in the container can only contact with the inner walls.

Our process is advantageous in that the walls for the body portion and for the respective heads may be assembled as separate units and thereafter the body portion and each head or both heads may be double seamed by a single operation. This operation may be carried out for the reason that the related flanges of each unit are held in fixed relation and may therefore be folded into a double seam relation. The process is also advantageous for the reason that the inner and outer walls may be positioned face to face and fabricated while in such relation, so that no unequal stresses on the inner walls result.

To those skilled in the art to which our invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. Our disclosures and the description herein are purely illustrative and not intended to be in any sense limiting.

What we claim is:

1. A container having a portion formed of inner and outer sheet metal walls, said walls being formed with aligned openings, a bung ring consisting of a flange engaging one of said walls and an internally and externally threaded collar

extending through said openings, and an internally threaded bung ring member threaded on said collar and engaging the other wall to clamp both walls between it and said flange, said flange and said bung ring member having related concentric portions arranged to bend the walls surrounding the openings therein laterally to effect an interlock between the walls and said flange.

2. A container having a portion formed of inner and outer sheet metal walls, said walls being formed with aligned openings, a bung ring member consisting of a flange engaging one of said walls and an internally and externally threaded collar extending through said openings, and an internally threaded bung ring member threaded on said collar and engaging the other wall to clamp both walls between it and said flange, one of said members being formed with an annular recess inwardly of its periphery and the other member being provided with an annular rib adapted to engage the said walls and bend them laterally to interlock them between one wall of said recess and said rib.

3. A container having a portion formed of

inner and outer sheet metal walls, said walls being formed with aligned openings and embossed around said openings to form a non-circular recess, a bung ring consisting of a flange having a non-circular periphery fitting into said recess and an internally threaded collar extending through said openings, and means engaging said collar and said sheet metal walls to secure the latter to said flange.

4. A container having a portion formed of inner and outer sheet metal walls, said walls being formed with aligned openings and embossed around said openings to form a non-circular recess, a bung ring consisting of a flange having a non-circular periphery fitting into said recess and an internally threaded collar extending through said openings, the inner face of said flange being formed with an annular channel, and a ring threaded on to said collar and engaging said sheet metal walls to clamp them into said channel.

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